THE POSTER TITLE COMES HERE

Subtitle

Name Surname // joint work with Nimi Sukunimi

Abstract

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Introduction

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

Results

Theorem 1 *Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetuer.*

Example 2 Let $f = f_{C,\zeta}$ be a locally univalent analytic function in $\mathbb{D}$ such that $f(-1) = 0$ and

$$f'(z) = -i\left(\frac{1+z}{1-z}\right)^{\frac{1}{2}} e^{\frac{C\zeta z}{2}}, \quad \zeta \in \partial\mathbb{D}, z \in \mathbb{D}.$$

Then

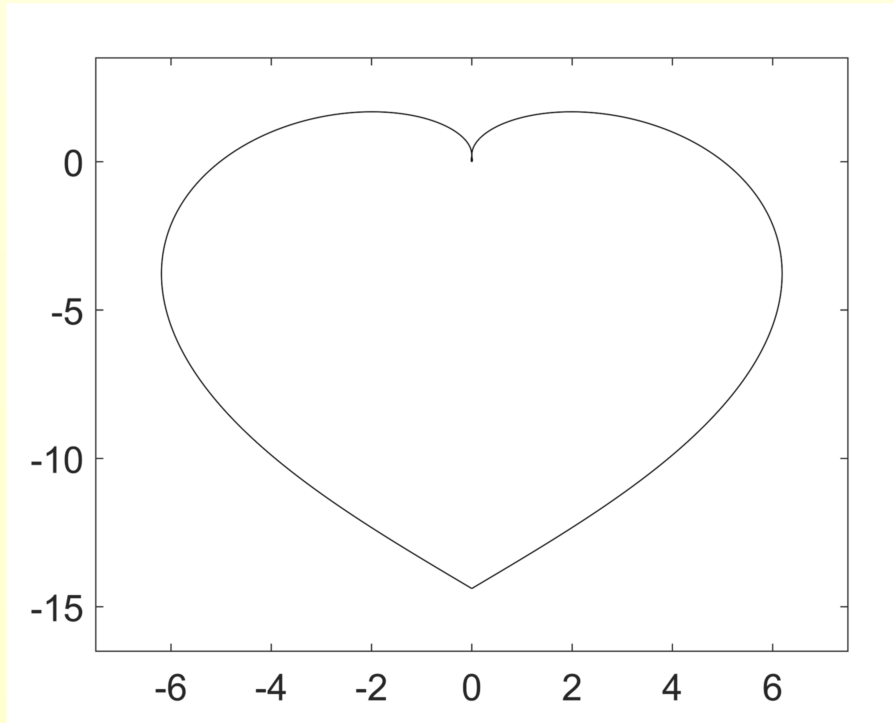
$$\frac{f''(z)}{f'(z)} = \frac{1}{1-z^2} + \frac{C\zeta}{2},$$

and f is univalent in $\mathbb{D}$ if $C \leq 1$ by Becker's univalence criterion. If f is univalent, then we obtain for $\zeta = 1$,

$$1 \geq \frac{|f'(x)|}{|k'(x)|} = \frac{e^{\frac{Cx}{2}}(1-x)^{5/2}}{(1+x)^{1/2}} \sim \frac{1+Cx/2}{1+3x}, \quad x \to 0^+,$$

where $k(z) = z/(1-z)^2$ is the Koebe function. Therefore, if $C > 6$, then f is not univalent.
The boundary curve $\partial f(\mathbb{D})$ has a cusp at $f(-1) = 0$. When $\zeta = -i$, the cusp has its worst behavior, and by numerical calculations the function f is not univalent if $C > 2.21$.
Moreover, as C increases, the valence of f increases.
The curve $\left\{f(e^{it}) : t \in (0,\pi]\right\}$ is a spiral unwinding from $f(-1)$. We may calculate the valence of f by counting how many times $h(t) = \mathrm{Re}(f(e^{it}))$ changes its sign on $(0,\pi]$. Numerical calculations suggest that the valence of f is approximately equal to $\frac{100}{63}C$.

Lemma 3 *Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.*



References

[1] J. Becker, *Löwnersche Differentialgleichung und quasikonform fortsetzbare schlichte Funktionen*, (German) J. Reine Angew. Math. **255** (1972), 23–43.

[2] J. Becker and Ch. Pommerenke, *Schlichtheitskriterien und Jordangebiete*, J. Reine Angew. Math. **354**, 74–94 (1984)

[3] J. Becker and Ch. Pommerenke, *Locally univalent functions and the Bloch and Dirichlet norm*, Comput. Methods Funct. Theory **16**, 43–52 (2016)

[4] E. Hille, *Oscillation Theorems in the Complex Domain*, Trans. Amer. Math. Soc. **23** (1922), no. 4, 350–385.

[5] W. Kraus, *Über den Zusammenhang einiger Characteristiken eines einfach zusammenhängenden Bereiches mit der Kreisabbildung*, Mitt. Math. Sem. Giessen **21** (1932), 1–28.

[6] Z. Nehari, *The Schwarzian derivative and schlicht functions*, Bull. Amer. Math. Soc. **55** (1949), 545–551.

[7] Ch. Pommerenke, *Univalent functions. With a chapter on quadratic differentials by Gerd Jensen*, Studia Mathematica/Mathematische Lehrbücher, Band XXV. Vandenhoeck & Ruprecht, Göttingen, 1975.

[8] B. Schwarz, *Complex nonoscillation theorems and criteria of univalence*, Trans. Amer. Math. Soc. **80** (1955), 159–186.

Information bar example 1.

Name Surname, **University of Eastern Finland**
name.surname@uef.fi

PREPRINT
https://arxiv.org/abs/1705.05738

UNIVERSITY OF EASTERN FINLAND

Information bar example 2.

CONTACT INFORMATION

name.surname@uef.fi
+000 00 000 0000

MORE INFORMATION

http://www.uef.fi/web/fysmat/latex

LOGO

UNIVERSITY OF EASTERN FINLAND

UNIVERSITY OF EASTERN FINLAND